

Title: Extreme Room Make-Over

Brief Overview:

The focus of the “Extreme Room Makeover Unit” is for students to gain a concrete understanding of perimeter and area of rectangles. Students will also apply and calculate area, surface area, and perimeter of rectangles and rectangular prisms. Before beginning, students should have prior knowledge of the characteristics and properties of two and three dimensional geometric shapes.

NCTM Content Standard:

In grades 3–5 all students should–

- Understand such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute;
- Understand the need for measuring with standard units and become familiar with standard units in the customary and metric systems;
- Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions

Grade/Level:

4th / 5th Grade

Duration/Length:

Three Days – 60 Minute lessons

One Day – 20 Minute Assessment

Student Outcomes:

Students will:

- Calculate area and perimeter of rectangular figures using given customary unit dimensions.
- Calculate surface area using knowledge of area formulas and prior knowledge of properties of 3-dimensional rectangular figures.
- Accurately calculate area, surface area, and perimeter.

Materials and Resources:

Materials:

- Multiple empty boxes of various sizes with labeled dimensions
(Try to supply boxes that have dimensions in whole inches)
- Square inch tiles

- Chart paper
- Family room model (Large empty box)
- Two Posters labeled perimeter and area
- Rectangular shapes around the classroom with dimensions
- Grid paper
- Construction paper
- Multiple tissue boxes
- Glue
- Rectangular Prisms of various sizes with labeled dimensions
- Yarn
- Stamps
- Tissue paper (wall paper)
- Stick-on notes
- Calculators
- Miscellaneous decorating tools for rooms

Teacher Resources:

Day One:

- *Answer Key Assessment: Extreme Room Make-over*
- *Power Point Day One*
- *Station Training Answer Key*
- *Area and perimeter: Using a Grid Answer Key*
- *Exit Slip Day One Answer Key*

Day Two:

- *Power point Day Two*
- *Teacher Resource Small Group Manipulatives (1 &2)*
- *Surface Area with Nets Answer Key*
- *Exit Ticket Day Two Answer Sheet*

Day Three:

- *Final Calculations Answer Key*
- *Extreme Room Make Over Rubric*

Student Resources:

Day One:

- *Assessment: Extreme Room Make-over*
- *Station Training*
- *Area and perimeter: Using a Grid*
- *Exit Slip Day One*

Day Two:

- *Practice Surface Area*

- *Surface Area with Nets*
- *Exit Ticket Day Two*

Day Three:

- *Final Calculations*
- *PQP Chart*

Development/Procedures:

Day 1

Pre-assessment

- Distribute a copy of *Assessment Extreme Room Make Over* to each student.
- An answer key is provided.

Engagement

- Collect the pre-assessment.
- Ask students how they felt about the pretest they have just taken.
- Explain to the class that we have all been asked to join the next “Extreme House Makeover Crew” and we are responsible for decorating all the children’s rooms.
- Present to the class the model family room you have constructed from an empty box.
 - The suite is made of an empty box, mimicking a family room. One flap is cut, so that the students have a panoramic view of the room.
- Asked the class what information they will need to accurately decorate the room with furniture, carpet and wall borders.
- Encourage students to use appropriate math vocabulary.
- Guide the discussion towards the trigger words, “**perimeter**” and “**area**”.
- Create heterogeneous groups and direct them to write down everything they know about perimeter and area on chart paper (3 minutes).
- Display the groups’ chart papers around the room for the students to view and read.

Exploration

- Discuss the similarities and differences of each group’s chart paper.
- Create one list of key terms to display in the classroom for the remainder of the CDU.
- Ask the class to think-pair-share (3 minute) and discuss:
 - How would I determine the amount of carpet that I need to cover the floor?
 - How would I determine the amount of border I need to go around the top of the room?
 - How would I determine the amount of track lighting I need in order to go around the room?
 - How would I determine the amount of tile to place on the floor?
- Hear answers from two or three of the pairs, and discuss their answers as a class.
- Give each group their empty box (room) and square inch tiles. (Note: It is essential that boxes have whole inch dimensions in order to clearly demonstrate area and perimeter with inch tiles)

- Have the students explore what information they need to cover the floor with tiles. What information do they need to place molding trim around the floor?
- Allow students ample time to explore with the materials.
- Ask the students to explain how they determined the amount of tiles they needed to cover their floor. (Write explanations on the board.
- Ask students to explain how they used the tiles to determine the amount of molding trim they needed to go around the room. Write explanations on the board.
- Ask students if they know another way they could have determined these values. Ask students what are the lengths and widths of each rectangular floor. Record these dimensions next to the area and perimeters recorder earlier.
- Allow students time to explore the correlation between the length and width of their rectangle and the area and perimeter values.
- Have students share their thoughts with the class. Record thoughts for the class.
- Students will discover that $\text{side} + \text{side} + \text{side} + \text{side} = \text{the perimeter}$ and $\text{the length} \times \text{width} = \text{the area}$.

Explanation

- Use direct instruction and introduce the vocabulary and formulas for area and perimeter using a Power-Point presentation, *Resource: Power Point Slides Day 1*
- Have students record the vocabulary and formulas.
- Present the family room model you have created to the class.
- Explain once again to the class this is ^{the} first room that we will be decorating today for Extreme House Makeover. The measurements of the family room are 12ft by 15ft.
- Ask the class which measurement would be appropriate to use: area or perimeter to install lights around the ceiling.
- Using given measurements, model the calculation process with the perimeter formula for rectangles ($\text{side} + \text{side} + \text{side} + \text{side} = \text{perimeter}$).
- Now ask the class what measurement would be appropriate to use installing carpet in this family room, area or perimeter.
- Using given measurements, model the calculation process with the area formula for rectangles.
- Review with the class:
 - The uses for area and perimeter
 - The formulas for finding area and perimeter of a rectangle
- Inform the students that they are going to play a quick game for them to apply what they have learned today.
 - Label two corners in your room, one perimeter and one area.
 - Tell the students to stand at their desk.
 - Explain that you want to place a fence around your back yard. What measurement would be most helpful and necessary to complete this task.
 - Instruct students to walk to the corner with their answer choice.
 - Discuss the answer (perimeter).
 - Instruct students to return to their seat.

- Explain to the class that Mrs. Smith wants to cover her chalkboard with white paper. What measurement would be most helpful and necessary to complete this task?
- Discuss the answer (area)
- Instruct students to return to their seats to begin group work.

Extension

- Explain to the class that they are going to do some “on the job training” before they decorate the house.
- Create five heterogeneous groups.
- Clarify to the class that they will work together in their groups and rotate to five different training stations. At each station there will be rectangles of various sizes with labeled dimensions. Any rectangular figure will work. Below we have suggestions that could be implemented. The students will use their knowledge to calculate the area and perimeter of each rectangle.
- Students will record their findings on the *Station Training Chart Resource*. An answer key is provided.
- Leave the formulas posted on the board as a reference for the students.
 - Station One : Computer Screen
 - Station Two: Door Frame
 - Station Three: Bulletin Board
 - Station Four: Window
 - Station Five: Rectangle table top
- Allow students to share their findings and record their results on the board.
- Check for understanding and pull a small group for re-teach if necessary.

Differentiation

- Reteach
 - Distribute a copy of *Area and Perimeter: Using a Grid* Resource to each student in the rectangle group.
 - Instruct students to count the boxes in the grid to find the area. Helpful Hint: Have students write numbers in the boxes so as they count they do not lose track. An answer key is provided.
 - Instruct students to count line segments of boxes around the rectangle to find the perimeter (Helpful Hint: Have students check off each line as they travel around the rectangle).
 - Label the rectangles with the correct measurements for length and width using the grid.
 - Use the dimensions to calculate the area and perimeter using the given formulas.
 - Give students opportunities to explore the connection between the grid paper and the formulas (Problem 1 & 2).
 - Gradually, encourage students to rely on the formulas (Problem 3).
 - Recommended Website: www.amathdictionaryforkids.com

- Enrich
 - After students have finished their training stations, they have the opportunity to continue practicing area and perimeter calculations. These questions are challenging and can be found at the bottom of *Station Training Chart Resource: Finished early Challenge*.

Evaluation

- Students should complete the Exit Ticket, *Perimeter and Area Exit Ticket (Day 1)*. An answer key is provided.

Day 2

Engagement

- Tell students that today they will continue to train for our Extreme Room Makeover.
- Today our focus will be on wall paper coverings.
- Ask students: what skills would be helpful to determine how much wall paper you will need?
- Have students do a 30 second share with a partner. Call on students to share their partners ideas. This will ensure that students are engaged and actively listening to peers thoughts.
- Mission for today: Cover a rectangular prism with paper without wasting paper and covering all surfaces.

Exploration

- How would you determine the amount of wall paper you need to cover all surfaces?
- Give each pair the same box they used yesterday. Also give each pair scissors, rulers, tiles, and construction paper.
- Tell the students to explore a way to cover every surface with construction paper without wasting any paper. Helpful Hint: Tell students to use a skill from yesterday.
- Supply students an abundance of time to explore and discover a successful strategy for covering their boxes.
- Allow students to share strategies and record thoughts on the board. What skills needed to be used? (Area)
- The students will discover that they need to find the area of every surface and then combine those calculations to reach a total amount of construction paper.

Explanation

- Use direct instruction and introduce the vocabulary and formulas for surface area using a power-point presentation. *Resource: Power Point Slides Day 2*.
 - Have students record the vocabulary and formulas.
 - Take out a tissue box
- Ask students:
 - How many rectangular sides they see on the box? (6)
 - How many areas will we have to find to cover on the box? (6)

- Why do we need to find the area and not the perimeter? (will not cover the entire surface)
- What measurements will we use to find the areas of these rectangles? (l x w)
- What operation can we use to put them all together? (addition)
- Use the dimensions of the tissue box to calculate the area of each side. Record your findings on a chart:

Rectangle One	<u> </u> X <u> </u> =	Area=	
Rectangle Two	<u> </u> X <u> </u> =	Area=	
Rectangle Three	<u> </u> X <u> </u> =	Area=	
Rectangle Four	<u> </u> X <u> </u> =	Area=	
Rectangle Five	<u> </u> X <u> </u> =	Area=	
Rectangle Six	<u> </u> X <u> </u> =	Area=	
Surface Area =			<u> </u>



- Explain that by adding all of the areas together they will get the surface area of the entire rectangle.
- Explain that before wall paper is added to our rooms they will need to practice finding surface area of rectangular prisms.

Extension

- Give each student group (4-5 students) a selection of rectangular prisms. Give each group a calculator, construction paper, glue, and scissors.
 - Recommended: tissue boxes, text books, pencil box, etc.
- Tell students they need to calculate the surface area of each rectangular prism.
- Tell students they will use their calculations to successfully cover each 3-D shape with construction paper.
- Students will need to find the area of each rectangle, recreate that rectangle using the construction paper, and finally, glue that rectangle to the box.
- Discuss group expectations and teamwork.
- *Use Practice Surface Area Resource* to record calculations and answer “Think About” questions.
- If students are successful all sides of the rectangular prism should be covered correctly (no extra paper and no gaps).
- Circulate the room to ensure that students are being successful. Pull a small group for possible re-teach strategies.

Differentiation

- Re-teach
 - Use geometric nets for more visual representation. Take nets for several rectangular prisms and find the area for each rectangle. Then add values to determine the surface area of the figure.
 - *Use Surface Area with Nets Resource*, A sample is provided for your use.
 - Give each student a copy of *Teacher Resource Small Group Manipulative 1 and 2*.
 - Instruct students to cut out net #1 to view how it is labeled.

- Explain to students that finding the surface area is really just finding the area of several rectangles and then adding them together.
- Show how the net of the rectangular prism is really a collection of rectangles.
- Have students cut apart the net.
- Have students view six rectangles and their dimensions.
- Do they notice anything? Do any of the rectangles look similar? Students should notice that there are three matches.
- Use the dimensions to calculate the area for each rectangle.
- Then add the areas up to determine the surface area of the rectangular prism.
- Continue working on problem two using net #2 to assist student thinking.
- Enrich
 - This game gives the student the surface area and they need to identify the dimensions of a cube. It is a work backwards activity that will be challenging.
<http://www.purposegames.com/game/surface-area-of-cubes-quiz>

Evaluation (Ongoing formative assessment for Day 2)

- *Exit Slip Day Two Resource* has two surface area problems for students to solve. An answer key is provided.

Day 3

Engagement

- Tell students that today they are going to be constructing their rooms for the room makeover!
- Tell students that all of the skills they have learned during the last few days will be needed for today's activity.
- Ask the students
 - What skills have been covered this unit? (perimeter, area, surface area)
 - Do we only need these skills in the classroom? (No)
 - How can YOU use these skills in your everyday life? (Icing a cake, covering a book, etc.)
 - How can these skills be useful to adults in everyday life? (Building, painting, wrapping a gift, etc.)
 - How can builders use these skills to remodel rooms or houses? (carpet, floor, paint)
 - Do you think builders, carpenters, and architects have a good understanding of area, perimeter, and surface area? (Yes!)

Exploration

- Tell students that today they will be working as real life builders to make-over children's rooms.
- Place students in their groups (4-5 heterogeneous) and supply them with the box they had earlier in the unit. Dimensions should already be labeled.

- Tell students that today they are going to be using their understanding of area, perimeter, and surface area to remodel the room. They will be responsible for several tasks:
 - Create a new floor for the room
 - Wall paper for four walls in the room
 - Border or tracking lights around the room
- Give students *Final Calculations Resource* where they can record their final calculations to express a deep understanding of area, perimeter, and surface area by applying their knowledge.
- Give the students an ample amount of time to remodel their rooms with the materials of their choice.
- Circulate the room to facilitate groups and ensure that calculations are being done successfully.
- Have students glue their final calculations sheet to the outside of their box for others to view.
- Allow time for clean up.

Explanation

- Tell students that they will be displaying their room models.
- Tell them to take a look around the room. Ask them several discussion questions:
 - Are some boxes bigger than others?
 - Do you believe some of their calculations may be bigger/smaller than others (bigger bases would have bigger floors)
 - Did everyone need the same amount of wall paper?
 - Who needed the most track lighting/ border?
- Give each group a pack of stick on notes and a *PQP Resource chart*.
- Tell students they will have 3 minutes at each group. They will leave their comments on the PQP chart using their stick on notes for each group they visit.
- While they are observing a room they are to:
 - Praise groups for things they really enjoy about their room.
 - Questions choices a group made or ask them how they were able to do something with the room
 - Make recommendations for the group to improve their work/calculations.
- After all rotations are completed have students view the thoughts on their PQP charts.

Extension

- Have each student identify one praise, question and polish that was identified on their PQP chart to reflect upon.
- Students will record their thoughts in their math journals. Supply some guiding questions:
 - What is one thing you and your group did well? Not so well?
 - What is one thing you are proud of?
 - What is one task that was difficult for you?
 - Are these skills (area, perimeter) that you can use in your own life?

Differentiation

- Re-teach
 - If students are struggling to complete their area and perimeter calculations successfully they should come back to a small group.
 - Cut slits into the seams of their box so that the box can lay flat (like a net)
 - Have the students execute the area of one rectangle at a time and then record the final calculations on their worksheet.
 - Boxes can simply be taped back together after all calculations have been completed
- Enrich
 - Complete bottom of *Final Calculations Resource*. Students will find the area of a room in order to problem solve the amount of furniture that can realistically fit in a room with the given dimensions of 15 ft by 19 ft. Students will express their thinking through a written response.

Evaluation

- *Final Calculations Resource* will provide information on how successful students were with completing there are, perimeter, and surface area calculations.
- *Extreme Room Make-Over Rubric* to assess students on performance.

Summative Assessment:

- Have students complete the *Summative Assessment*. An answer key is provided.
 - 5 – Questions: 4 Multiple Choice and 1 BCR

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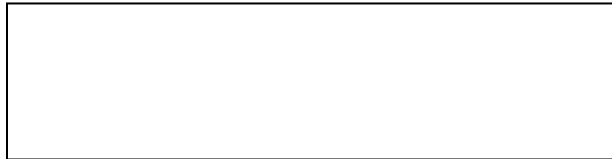
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Name: _____

Assessment “Extreme Room Makeover”
Geometry: Area/ Surface Area and Perimeter

1.

4 ft

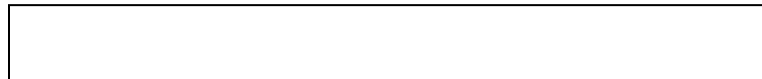


20 ft

What is the area of the rectangle above?

- Ⓐ 48 ft^2
- Ⓑ 24ft^2
- Ⓒ 80 ft^2
- Ⓓ 5ft^2

2.



2 ft

25 ft

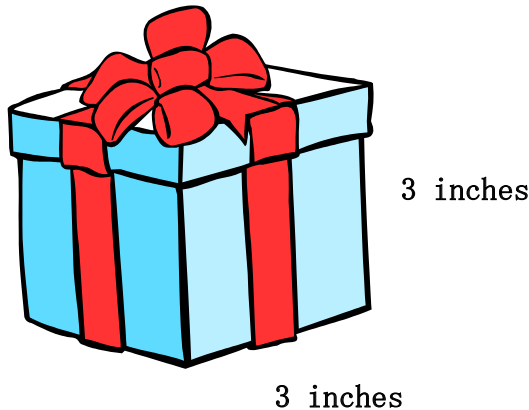
What is the perimeter of the rectangle above?

- Ⓐ 54 ft^2
- Ⓑ 27f^2
- Ⓒ 52 ft^2
- Ⓓ 5f^2

3. Miss Smith is retiling her kitchen floor. She has purchased marble tiles. Each tile has an area of 1 square foot. If her floor is 18 feet long and 4 feet wide, how many tiles does she need?

- Ⓐ 90 tiles
- Ⓑ 22 tiles
- Ⓒ 18 tiles
- Ⓓ 72 tiles

4. Devon purchased a birthday gift for his brother. He decided to wrap it using his favorite color wrapping paper. His box was a perfect cube. Using the dimensions below decide how much wrapping paper Devon needed to use?



- Ⓐ 70 inches²
- Ⓑ 54 inches²
- Ⓒ 36 inches²
- Ⓓ 6 inches²

BCR

Lisa recently installed a new fence in her backyard. In total, the fence was 120 ft long. What could be the dimensions of Lisa's backyard?

Step A

Step B

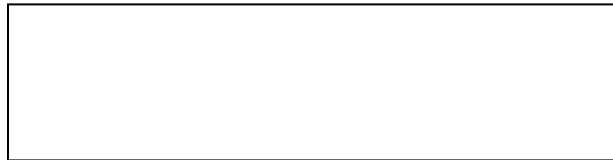
Explain how you determined your answer. Use what you know about in your explanation. Use words, numbers, and/or symbols in your explanation.

Name: **Answer key**

Assessment "Extreme Room Makeover"
Geometry: Area/ Surface Area and Perimeter

3.

4 ft

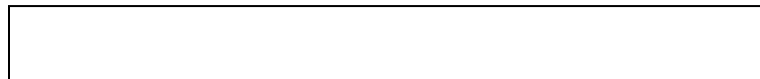


20 ft

What is the area of the rectangle above?

- ☐ Ⓐ 48 ft²
- ☐ Ⓑ 24ft ²
- ☒ Ⓒ 80 ft²
- ☐ Ⓓ 5ft²

4.



2 ft

25 ft

What is the perimeter of the rectangle above?

- ☒ Ⓐ 54 ft
- ☐ Ⓑ 27ft
- ☐ Ⓒ 52 ft
- ☐ Ⓓ 5ft

5. Miss Smith is retiling her kitchen floor. She has purchased marble tiles. Each tile has an area of 1 square foot. If her floor is 18 feet long and 4 feet wide, how many tiles does she need?

- Ⓐ 90 tiles
Ⓑ 22 tiles
Ⓒ 18 tiles
☒ 72 tiles

6. Devon purchased a birthday gift for his brother. He decided to wrap it using his favorite color wrapping paper. His box was a perfect cube. Using the dimensions below decide how much wrapping paper Devon needed to use?



3 inches

3 inches

- Ⓐ 70 inches²
☒ 54 inches²
Ⓒ 36 inches²
Ⓓ 6 inches²

BCR

Lisa recently installed a new fence in her backyard. In total, the fence was 120 ft long. What could be the dimensions of Lisa's backyard?

Step A

Answers may vary: Any four numbers that add together to equal 120.

Step B

Explain how you determined your answer. Use what you know about in your explanation. Use words, numbers, and/or symbols in your explanation.

Sample Response: Lisa's yard may be 50 feet long and 10 feet wide. I know this

because the formula to find the perimeter of a rectangle is side+side+side+side.

If these are the dimensions of Lisa's yard the perimeter would be 120 feet long.

(50+50+10+10= 120). I needed to find the perimeter because a fence goes

around the rim of a yard.

Extreme Makeover



Day 1



Extreme Room Make-Over



Extreme Makeover

What units of measurements will you need to build this house?



Extreme Room Make-Over



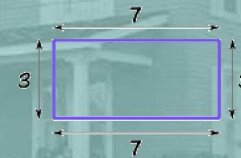
Vocabulary & Key Terms

Perimeter:

❖ The distance around a two-dimensional shape.

Example:

The perimeter of this rectangle is $3+7+3+7 = 20$



Extreme Room Make-Over



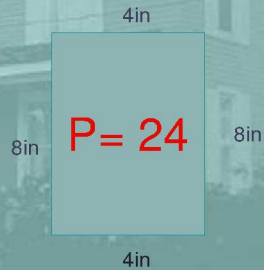
The Perimeter Formula



$$P = S + S + S + S$$

Perimeter =
Side + Side + Side + Side.

$$P = 4 + 8 + 4 + 8 = 24\text{in.}$$



Extreme Room
Make-Over



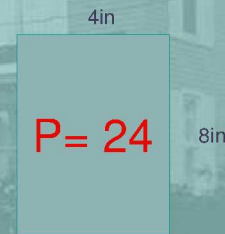
The Area Formula



$$A = \text{length} \times \text{width}$$

$$\text{Area} = \text{Side 1} \times \text{Side 2}$$

$$P = 4 \times 8 = 32\text{in}^2$$



Extreme Room
Make-Over

Teacher Modeling

Extreme Room
Make-Over





Extension

1. In groups of four you will rotate to five measuring stations and measure each object.
2. Write down the number and unit of each measurement of each object.

Station #1 - Computer Screen
Station #2 - Door Frame
Station #3 - Bulletin Board
Station #4 - Window
Station #5 - Rectangular Table Top



Extreme Room
Make-Over



Exit Ticket

Extreme Room
Make-Over



Name: _____

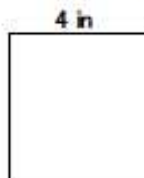
Station Training:

ARE YOU READY???

With your team members, rotate to the five stations around the room. Use your smarts to calculate the perimeter and area of each rectangle. You may use calculators! Be sure to include the appropriate units and labels.

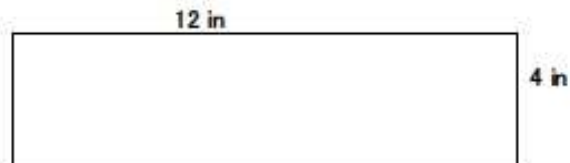
Station Number:	Perimeter:	Area:

Finished Early Challenge? :



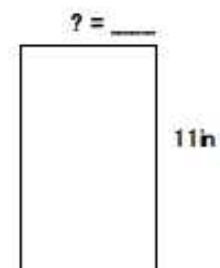
Area:

Perimeter:



Area:

Perimeter:



Area: 33 in²

Perimeter:



Name: **Answer Key**

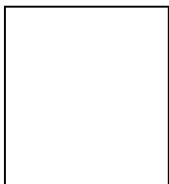
**Station Training:
ARE YOU READY???**

With your team members, rotate to the five stations around the room. Use your smarts to calculate the perimeter and area of each rectangle. You may use calculators! Be sure to include the appropriate units and labels.

Station Number:	Perimeter:	Area:

Finished Early Challenge? :

4 in



Area: 16 in^2
Perimeter: 16 in

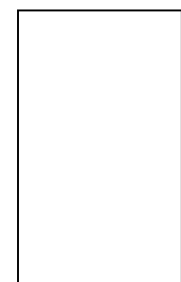
12 in



Area: 48 in^2
Perimeter: 32 in

4in

? = 3



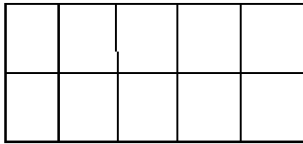
11in

Area: 33 in^2
Perimeter: 28 in



Name: _____

Area and Perimeter: Using a Grid Resource



Area (Boxes): _____

Perimeter (Boxes): _____

Area ____ x ____ = ____ units ²

Perimeter

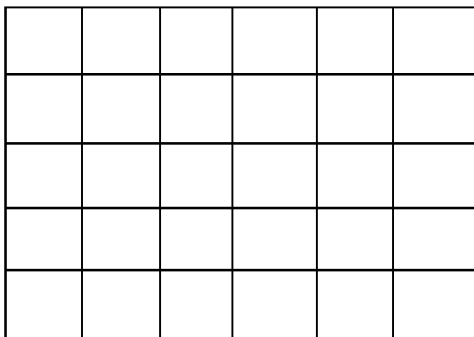
____ + ____ + ____ + ____ = ____ units

Formulas:

Area: length x width

Perimeter:

Side + Side + Side + Side



Area (Boxes): _____

Perimeter (Boxes): _____

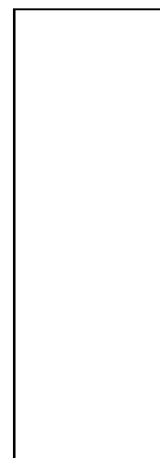
Area ____ x ____ = ____ units ²

Perimeter

____ + ____ + ____ + ____ = ____ unit



YOU CAN DO IT



7 in

2 in

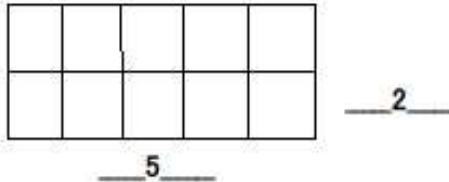
Perimeter: _____

Area: _____



Name: **Answer Key**

Area and Perimeter: Using a Grid Resource



Area (Boxes): 10

Perimeter (Boxes): 14

Area 2 x 5 = 10 units²

Perimeter

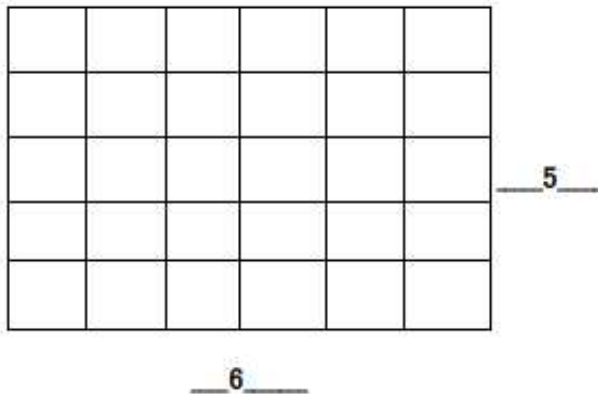
2 + 2 + 5 + 5 = 14 units

Formulas:

Area: length x width

Perimeter:

Side + Side + Side + Side



Area (Boxes): 30

Perimeter (Boxes): 22

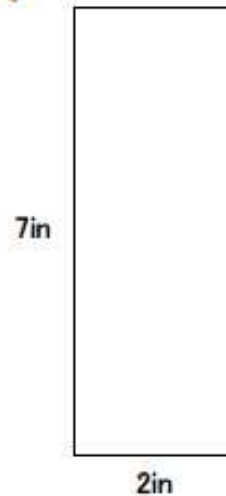
Area 6 x 5 = 30 units²

Perimeter

6 + 6 + 5 + 5 = 22 unit

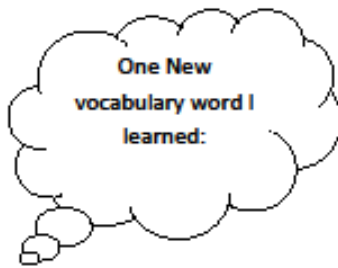


YOU CAN DO IT



Perimeter: 18 units

Area: 14 units²



Name: _____

Show off your SMARTS!!

Perimeter and Area Exit slip: Day One

1. What do you need to calculate? Circle **P** for Perimeter and **A** for Area:

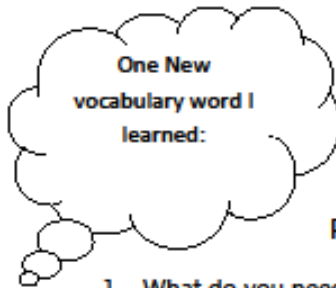


How much mulch do you need to fill in your garden? A or P
How many bricks do you need to outline your sidewalk? A or P
How much wallpaper do you need to decorate a wall? A or P



Area: _____

Perimeter: _____



Name: _____

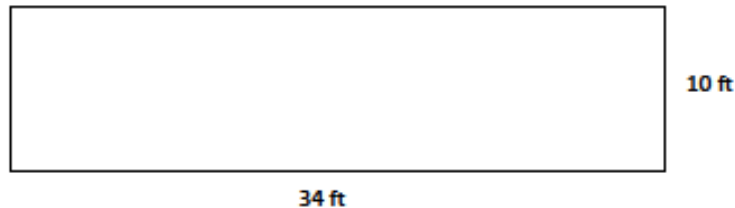
Show off your SMARTS!!

Perimeter and Area Exit slip: Day One

1. What do you need to calculate? Circle **P** for Perimeter and **A** for Area:

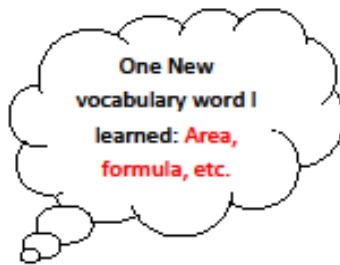


How much mulch do you need to fill in your garden? A or P
How many bricks do you need to outline your sidewalk? A or P
How much wallpaper do you need to decorate a wall? A or P



Area: _____

Perimeter: _____



Name: Answer key

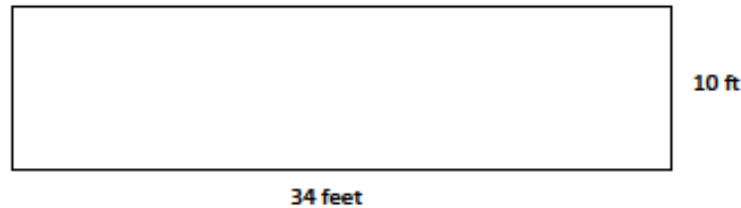
Show off your SMARTS!!

Perimeter and Area Exit slip: Day One

1. What do you need to calculate? Circle **P** for Perimeter and **A** for Area:



How much mulch do you need to fill in your garden? **A** or **P**
How many bricks do you need to outline your sidewalk? **A** or **P**
How much wallpaper do you need to decorate a wall? **A** or **P**



Area: 340 feet squared

Perimeter: 88 feet

Extreme Makeover



Day 2

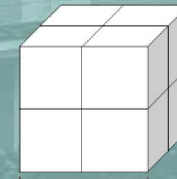
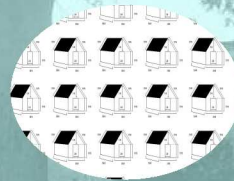


Extreme Room
Make-Over

EXPLORATION

As a team you are responsible for covering every surface with construction paper without wasting any paper.

How will you achieve this goal?



Extreme Room
Make-Over

Vocabulary & Key Terms

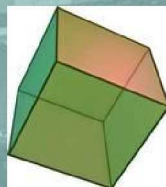
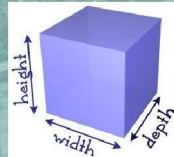


Surface Area:

❖ Is the total area of the surface of a three-dimensional object

Example:

❖ The surface area of a cube is $6 \times (\text{Edge Length})^2$



Extreme Room
Make-Over

Teacher Modeling & Class Discussion

Figure:	Area Formula:	Area:
Rectangle 1	$\text{ } \times \text{ } =$	
Rectangle 2	$\text{ } \times \text{ } =$	
Rectangle 3	$\text{ } \times \text{ } =$	
Rectangle 4	$\text{ } \times \text{ } =$	
Rectangle 5	$\text{ } \times \text{ } =$	
Rectangle 6	$\text{ } \times \text{ } =$	
Surface Area		

Extreme Room
Make-Over

Extension

Figure:	Area Formula:	Area:
Rectangle 1	_____ X _____ =	
Rectangle 2	_____ X _____ =	
Rectangle 3	_____ X _____ =	
Rectangle 4	_____ X _____ =	
Rectangle 5	_____ X _____ =	
Rectangle 6	_____ X _____ =	
Surface Area		



Extreme Room
Make-Over

Discussion

1. Once you calculate the area of one side of the rectangular prism, what can you conclude about the parallel side?
2. Using your prior knowledge about the properties of rectangles, what can you conclude about congruent edges and sides?

Extreme Room
Make-Over

Exit Ticket

Extreme Room
Make-Over

Group Members: _____

Practice Surface Area Resource

Figure:	Area Formula:	Area:
Rectangle 1	_____ X _____ =	
Rectangle 2	_____ X _____ =	
Rectangle 3	_____ X _____ =	
Rectangle 4	_____ X _____ =	
Rectangle 5	_____ X _____ =	
Rectangle 6	_____ X _____ =	



SURFACE AREA:

Figure:	Area Formula:	Area:
Rectangle 1	_____ X _____ =	
Rectangle 2	_____ X _____ =	
Rectangle 3	_____ X _____ =	
Rectangle 4	_____ X _____ =	
Rectangle 5	_____ X _____ =	
Rectangle 6	_____ X _____ =	



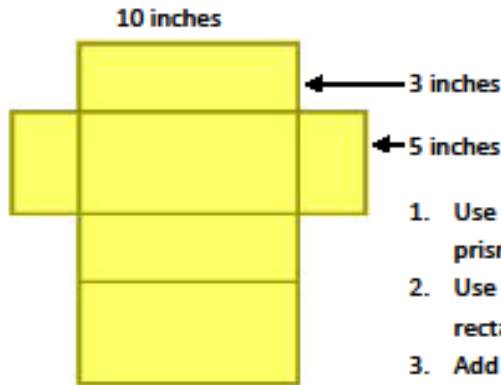
SURFACE AREA:

Were you able to successfully cover all of your boxes? Why or why not?

Think About...

1. When you add wall paper to your bedroom, how will your calculations change?

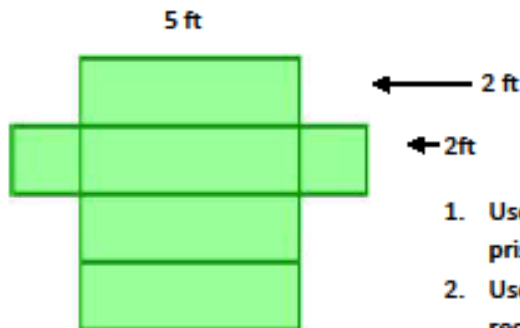
Surface Area with Nets



1. Use what you know about rectangles to label all sides of the prism.
2. Use what you know about area to calculate the area of each rectangle
3. Add them together to calculate the surface area of the prism.

Figure:	Area Formula:	Area:
Rectangle 1	_____ X _____ =	
Rectangle 2	_____ X _____ =	
Rectangle 3	_____ X _____ =	
Rectangle 4	_____ X _____ =	
Rectangle 5	_____ X _____ =	
Rectangle 6	_____ X _____ =	

Surface Area: _____

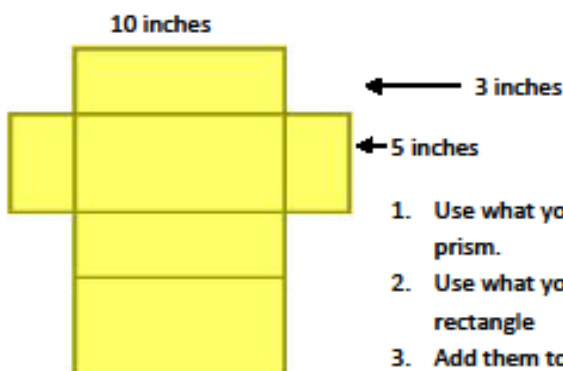


1. Use what you know about rectangles to label all sides of the prism.
2. Use what you know about area to calculate the area of each rectangle
3. Add them together to calculate the surface area of the prism.

Figure:	Area Formula:	Area:
Rectangle 1	_____ X _____ =	
Rectangle 2	_____ X _____ =	
Rectangle 3	_____ X _____ =	
Rectangle 4	_____ X _____ =	
Rectangle 5	_____ X _____ =	
Rectangle 6	_____ X _____ =	

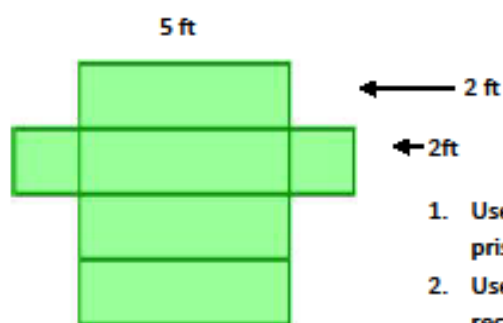
Surface Area: _____

Surface Area with Nets



1. Use what you know about rectangles to label all sides of the prism.
2. Use what you know about area to calculate the area of each rectangle
3. Add them together to calculate the surface area of the prism.

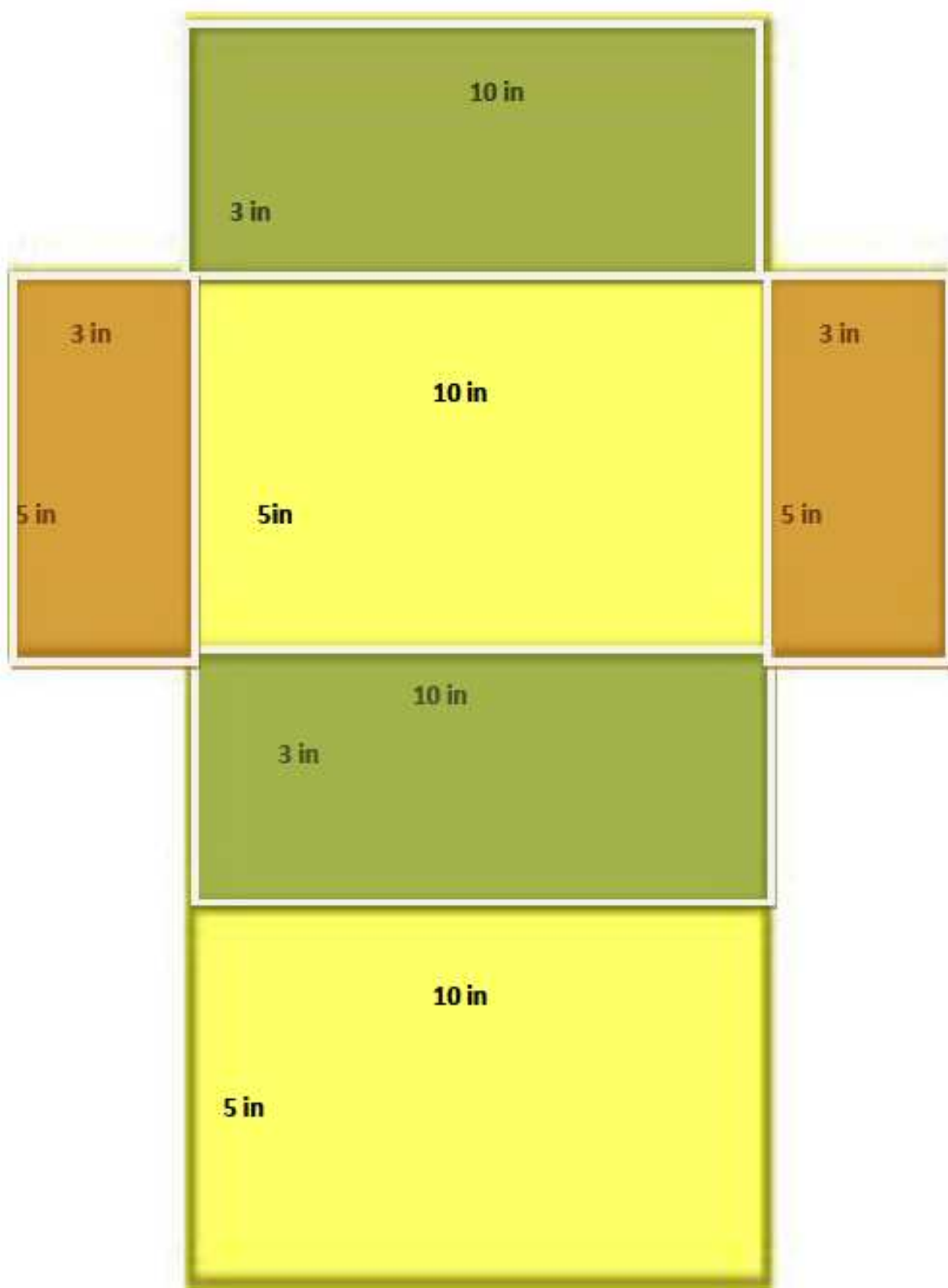
Figure:	Area Formula:	Area:
Rectangle 1	$10 \times 5 =$	50 in^2
Rectangle 2	$10 \times 3 =$	30 in^2
Rectangle 3	$10 \times 5 =$	50 in^2
Rectangle 4	$10 \times 3 =$	30 in^2
Rectangle 5	$3 \times 5 =$	15 in^2
Rectangle 6	$3 \times 5 =$	15 in^2

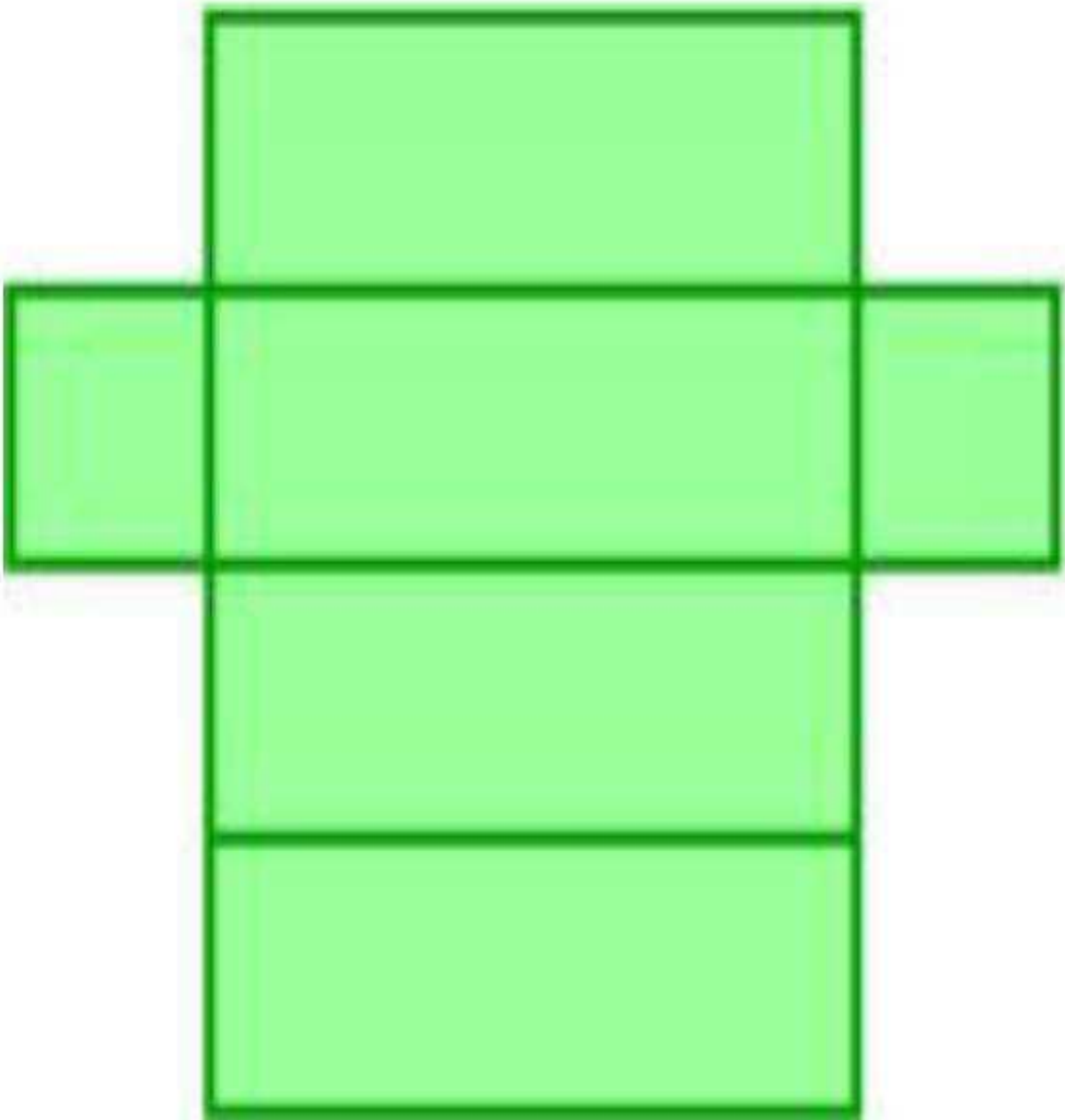
Surface Area: 190 in^2 

1. Use what you know about rectangles to label all sides of the prism.
2. Use what you know about area to calculate the area of each rectangle
3. Add them together to calculate the surface area of the prism.

Figure:	Area Formula:	Area:
Rectangle 1	$5 \times 2 =$	10 in^2
Rectangle 2	$5 \times 2 =$	10 in^2
Rectangle 3	$5 \times 2 =$	10 in^2
Rectangle 4	$5 \times 2 =$	10 in^2
Rectangle 5	$2 \times 2 =$	4 in^2
Rectangle 6	$2 \times 2 =$	4 in^2

Surface Area: 48 in^2





Name _____

Exit Ticket - Day #2

1.

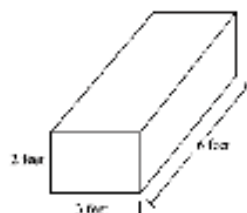


Figure:	Area Formula:	Area:
Rectangle 1	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 2	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 3	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 4	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 5	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 6	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Surface Area		

2.

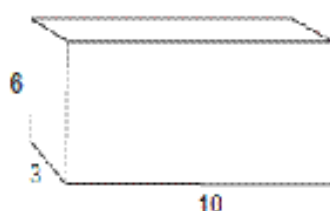


Figure:	Area Formula:	Area:
Rectangle 1	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 2	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 3	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 4	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 5	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 6	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Surface Area		

Name _____

Exit Ticket - Day #2

1.

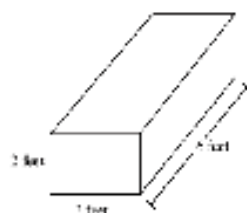


Figure:	Area Formula:	Area:
Rectangle 1	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 2	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 3	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 4	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 5	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 6	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Surface Area		

2.

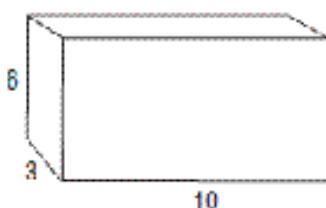


Figure:	Area Formula:	Area:
Rectangle 1	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 2	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 3	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 4	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 5	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Rectangle 6	$\underline{\hspace{1cm}} X \underline{\hspace{1cm}} =$	
Surface Area		

Exit Ticket - Day #2

Answer Sheet

1.

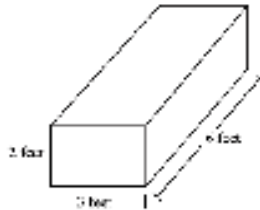


Figure:	Area Formula:	Area:
Rectangle 1	$6 \times 2 =$	12
Rectangle 2	$6 \times 2 =$	12
Rectangle 3	$3 \times 6 =$	18
Rectangle 4	$6 \times 6 =$	18
Rectangle 5	$2 \times 3 =$	6
Rectangle 6	$2 \times 3 =$	6
Surface Area		72 in ²

2.

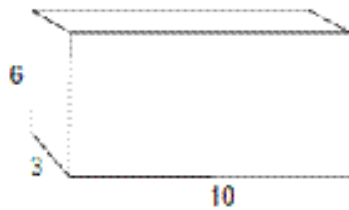


Figure:	Area Formula:	Area:
Rectangle 1	$10 \times 6 =$	60
Rectangle 2	$10 \times 6 =$	60
Rectangle 3	$6 \times 3 =$	18
Rectangle 4	$6 \times 3 =$	18
Rectangle 5	$10 \times 3 =$	30
Rectangle 6	$10 \times 3 =$	30
Surface Area		216 in ²

Name _____

Extreme Room Make-Over Final Calculations

1. Area of carpet or tile floor? _____
2. Surface area of the entire room? _____
3. Surface area of 4 walls covered by wall paper? _____
4. Length of the border or track lights in the room? _____

Enrichment - Day #3

Okay Team Extreme, you have done an amazing job making-over your bedroom suite. The kids are so please with your decorating skills; that they have asked you to place all their furniture in the room. There only concern is will it all fit? You will decide what size bed you will have to buy, in order for all of the furniture to fit.

Bedroom Suite

REMEMBER

12in = 1 Foot

Door

QUEEN	FULL
QUEEN 60"x 80" OLYMPIC QUEEN 66"x 80"	FULL 54" x 75" EXTRA LONG 54"x 80"
KING	TWIN
EASTERN 76"x 80" CALIFORNIA (WESTERN) 72"x 84"	TWIN 38"x 75" EXTRA LONG 38"x 80"

Will all of the furniture fit? _____

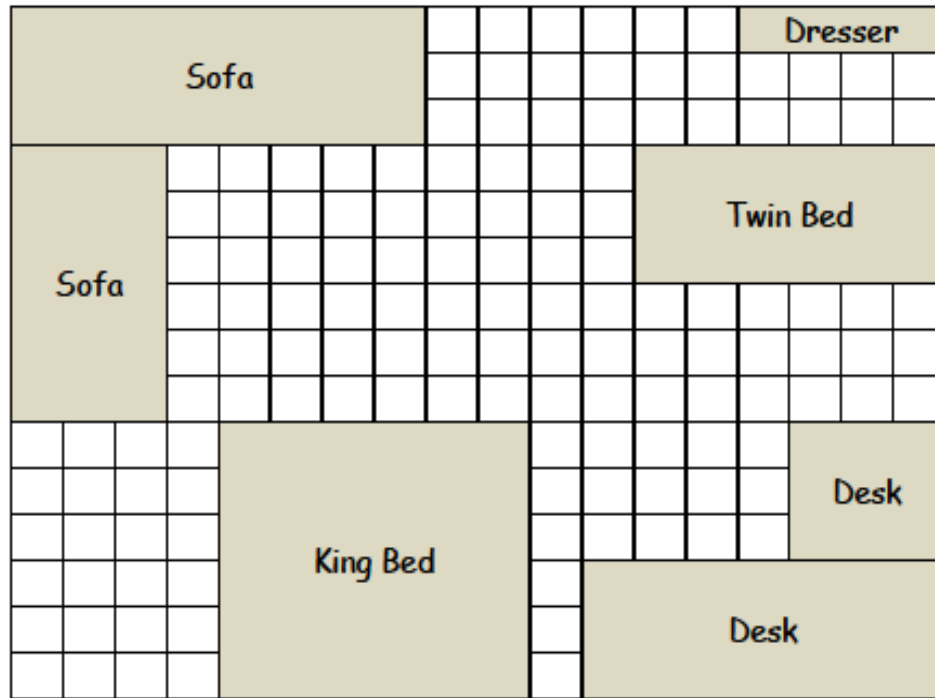
What size bed can you order? _____

Explain your how you determined answer. _____

Extreme Room Make-Over Final Calculations - Answer Key

1. Area of carpet or tile floor? Answers Will Vary
2. Surface area of the entire room? Answers Will Vary
3. Surface area of 4 walls covered by wall paper? Answers Will Vary
4. Length of the border or track lights in the room? Answers Will Vary

Possible Solution



Will all of the furniture fit? YES

What size bed can you order? Answer Will Vary

Explain your how you determined answer. Answer Will Vary

Group members: _____



POP

You did a great job working!

Praise: You did a great job...	Questions Why did you decide to...	Polish Maybe next time you could ...

Name: _____

Date: _____

Extreme Room Make-Over

Objectives	Below Avg.	Satisfactory	Excellent
Calculate area and perimeter of rectangular figures given customary unit dimension.	1	2	3
Calculate surface area using knowledge of area formulas and prior knowledge of properties of 3-dimensional rectangular surfaces.	1	2	3
Accurately calculate area and perimeter by constructing a decorated model bedroom suite with customary units of measurements.	1	2	3
Process	Below Avg.	Satisfactory	Excellent
1. Has clear vision of final product	1	2	3
2. Properly organized to complete project	1	2	3
3. Managed time wisely	1	2	3
4. Acquired needed knowledge base	1	2	3
5. Communicated efforts with teacher	1	2	3
Product (Project)	Below Avg.	Satisfactory	Excellent
1. Format	1	2	3
2. Mechanics of speaking/writing	1	2	3
3. Organization and structure	1	2	3
4. Creativity	1	2	3
5. Demonstrates knowledge	1	2	3
6. Other:	1	2	3

Total Score: _____

Teacher Comment: